

CASE REPORT

Surgical retrieval of a migrated peripherally inserted central catheter guidewire in an acute myeloid leukaemia patient: A case report



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Ethical approval was not sought because this is a case report. However, written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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Introduction

Acute myeloid leukaemia (AML) treatment typically involves intensive chemotherapy regimens, often necessitating the placement of central venous access devices. Peripherally inserted central catheters (PICCs) are frequently utilised for this purpose [1]. Although PICC lines are generally considered safe and effective, complications may arise during insertion or management, including rare instances of guidewire dislodgement. Retaining a guidewire during interventional procedures can lead to serious complications if not addressed promptly. Thrombosis, embolisation, sepsis, and perforation are the potential risks associated with retained guidewires [2]. In some instances, guidewire retention can result in acute coronary thrombosis [3]. This case report describes an unusual complication of PICC line insertion in a patient with AML, emphasising the importance of vigilance during central venous access and managing preventable mishaps.

Case description and management

A 45-year-old man was admitted to the Al Helal Specialised Hospital in Mirpur, Dhaka, on 4 October 2024 with suspected dislodgement of the PICC guidewire. The patient was transferred from Lab One Hospital, Uttara, Dhaka, where he had to receive a second cycle of chemotherapy for AML. During the insertion of a PICC line into the patient's left hand for chemotherapy, an unexpected complication occurred at the Lab One Hospital. The guidewire of the

introducer sheath migrated into the patient's body, necessitating emergency transfer to Al Helal Specialised Hospital for guidewire removal, as such facilities were unavailable at Lab One Hospital. The patient was haemo-dynamically stable upon admission. Chest radiography revealed a clear path of the dislodged guidewire extending from the medial one-third of the clavicle to the inferior vena cava along the PICC line (Figure 1). Initially, an attempt was made to remove the PICC line, anticipating that the guidewire would be extracted simultaneously with the catheter. However, this approach was unsuccessful, as the guidewire remained in situ. Subsequently, a right anterolateral thoracotomy for guidewire removal was proposed. The patient and his relatives were consulted regarding the potential benefits and risks of the procedure, and written informed consent was obtained.

A thoracotomy was performed through the 5th intercostal space. The superior vena cava was controlled proximally and distally. Manual palpation of the superior vena cava was performed to locate the guidewire precisely. Surgical measure was taken to remove it (Figure 2). A small incision was made over the superior vena cava, and the guidewire was successfully removed using a skin hook. The thoracotomy was closed in layers, and a water-sealed chest drain tube was inserted. A cardiac anaesthesiologist, cardiovascular and thoracic surgeon and haemato-oncologist were involved in this procedure. Postoperative radiography confirmed

Key messages

Guidewire dislodgement and migration during peripherally inserted central catheter line insertion can be life-threatening through embolism, thrombosis, or vascular injury. Such a dislodgement was promptly detected and surgically removed by a multidisciplinary team in a 45-year-old Bangladeshi man. An initial attempt at nonsurgical removal was unsuccessful.

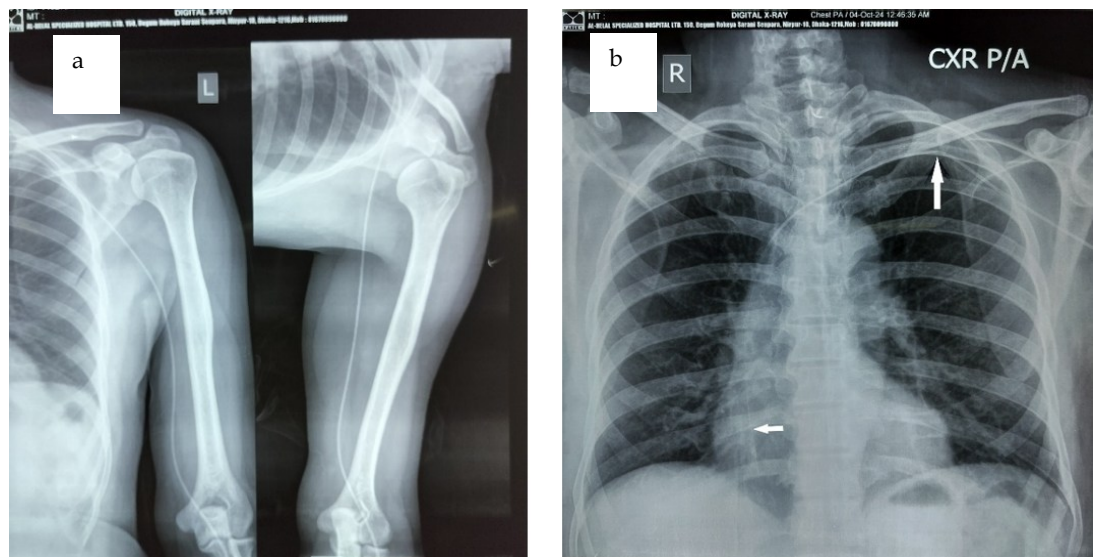


Figure 1 Preoperative X-ray showing peripherally inserted central catheters with the retained guidewire: a) left arm, b) chest (arrows indicate guidewire's position)

the complete removal of the guidewire. There were no complications during the patient's recovery, and the chest drain tube was removed the following day. The patient was subsequently transferred back to the original hospital in stable condition to continue treatment of AML.

Discussion

PICC lines are widely used in oncology for stable venous access, though complications like infection and thrombosis are common [4]. Guidewire dislodgement and migration are rare, but these serious complications can occur during the PICC line placement [5]. Retrieving a migrated guidewire is technically challenging and requires thorough knowledge of vascular anatomy and potential complications. Literature suggests prompt intervention is crucial to prevent further

retrieval, especially in patients with compromised vascular integrity.

Research supports the efficacy of surgical extraction for complications arising from retained guidewires, as demonstrated in various case studies. These cases underscore the critical role of surgery where non-invasive interventions prove ineffective [8]. Healthcare professionals should implement standardised protocols for PICC placement, using checklists to ensure all components are accounted for post-procedure [9].

This case report presents a rare but potentially serious complication associated with PICC line insertion in a patient undergoing treatment for AML. It also emphasises the need for the importance of multidisciplinary approaches in managing such iatrogenic complications.

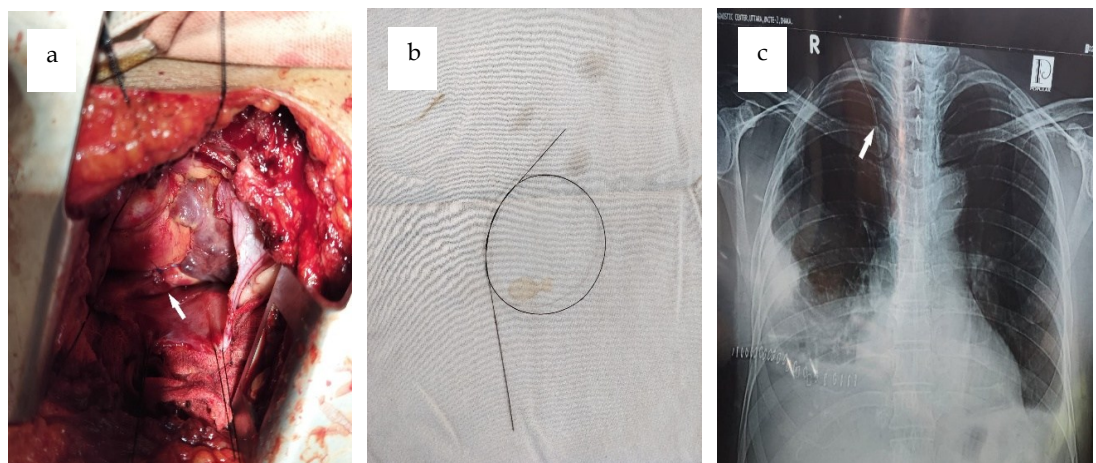


Figure 2 Operative and postoperative images: a) closed stoma over superior vena cava, b) removed guidewire, and c) postoperative X-ray after removal of the guidewire central venous catheter in situ.

complications, such as embolism or vascular injury [6], including a case from Bangladesh [7]. Established techniques for a dislodged guidewire removal include endovascular approaches and surgical explorations. Our case report highlights the challenges of surgical

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Author contributions

Manuscript drafting and revising it critically: SKS, MSS, HS. *Approval of the final version of the manuscript:* SKS, MSS, HS, MAU, MAH. *Guarantor accuracy and integrity of the work:* SKS, MSS, HS, MAU, MAH.

Conflict of interest

We do not have any conflict of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

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